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INTERIM REMEDIAL DESIGN / REMEDIAL ACTION
WORK PLAN FOR SURFACE WATER - DRAFT 3/99

Monticello Mill Tailings Site
Operable Unit III

Interim Remedial Design/Remedial Action (RD/RA) Work Plan for Operable Unit III – Surface Water and Ground Water

DRAFT FINAL

March 1999

U.S. Department of Energy

Work Performed Under DOE Contract Number DE–AC13–96GJ87335 for the U.S. Department of Energy

Monticello Mill Tailings Site

Operable Unit III

Interim Remedial Design/Remedial Action (RD/RA) Work Plan for Operable Unit III—Surface Water and Ground Water

DRAFT FINAL

March 1999

Prepared by
U.S. Department of Energy
Albuquerque Operations Office
Grand Junction Office

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Acronyms

AL	Albuquerque Operations Office
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FFA	Federal Facilities Agreement
FS	Feasibility Study
FY	fiscal year
GJO	Grand Junction Office
HQ	Headquarters
IRA	Interim Remedial Action
IROD	Record of Decision for an Interim Remedial Action
MMTS	Monticello Mill Tailings Site
OU	Operable Unit
PeRT	Permeable Reactive Treatment
RA	Remedial Action
RAC	Remedial Action Contractor
RD	Remedial Design
SARA	Superfund Amendments and Reauthorization Act
UDEQ	Utah Department of Environmental Quality

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Executive Summary

This *Operable Unit III Interim Remedial Design/Remedial Action Work Plan* gives an overview of management, tasks, and schedules for completion of the interim remedial action for Operable Unit III–Surface Water and Ground Water of the Monticello Mill Tailings Site. The major components of the interim remedial design and remedial action are:

- Implementation of institutional controls
- Ground-water and surface-water monitoring and other data collection activities
- Continuation of Millsite dewatering and treatment, if necessary
- Permeable Reactive Treatment (PeRT) Wall Treatability Study
- Preparation of the post-Millsite Remediation Feasibility Study for Operable Unit III Surface Water and Ground Water.

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1.0 Introduction

1.1 Response and Enforcement History and Objectives

This *Operable Unit* (OU) *III Surface Water and Ground Water Interim Remedial Design/Remedial Action* (RD/RA) *Work Plan* identifies the activities necessary to complete the remedial design and the approach for implementation of the interim remedial action (IRA) for OU III surface water and ground water at the Monticello Mill Tailings Site (MMTS) (Figure 1–1). This RD/RA Work Plan is in response to the *Record of Decision for the Operable Unit III Interim Remedial Action* (the IROD) (DOE 1998) which was signed on September 29, 1998.

The MMTS is on the National Priorities List and is being remediated in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and the State of Utah entered into a Federal Facilities Agreement (FFA) pursuant to Section 120 of CERCLA/SARA, in December 1988 (DOE 1988). DOE, EPA, and the Utah Department of Environmental Quality (UDEQ) have agreed to perform response actions at the MMTS in accordance with the FFA. DOE is the lead agency that provides principal staff and resources to plan and implement the response actions. Responsibility for oversight of activities performed under the FFA will be shared by EPA and UDEQ; EPA is the lead agency with ultimate responsibility and authority but shares its decision-making with UDEQ (DOE 1988, Section VIII.B).

The *Monticello Site Management Plan* (DOE 1998a) provides an overview of the site background and history, project descriptions and interrelationships, and an overall schedule for completion of remedial action and remedial investigation for the Monticello Projects. The Site Management Plan provides background information necessary for review of this work plan.

1.2 Summary of OU III Surface Water and Ground Water Interim Remedial Design and Remedial Action Activities Completed To Date

- **Institutional Controls**—A letter of request and justification for institutional controls was submitted to the Utah State Engineer's Office on July 9, 1998, for approval of institutional controls in the contaminated areas along Montezuma Creek. Verbal approval was received by DOE on October 21, 1998. The Utah State Engineer's Office stated at that time that they are responsible for implementing the institutional controls. Once implemented, DOE will ensure that the institutional controls are working.

- **Monitoring and Additional Data Collection**—Monitoring is ongoing according to the draft *Monticello Mill Tailings Site, Operable Unit III, Interim Remedial Action Annual Monitoring Program* (DOE 1999). That plan calls for quarterly monitoring. Additional data collection has been initiated through verification sampling conducted through OU I activities. This data will support ground-water modeling and revisions to the draft *Monticello Mill Tailings Site, Operable Unit III, Feasibility Study* (FS) (DOE 1998c).

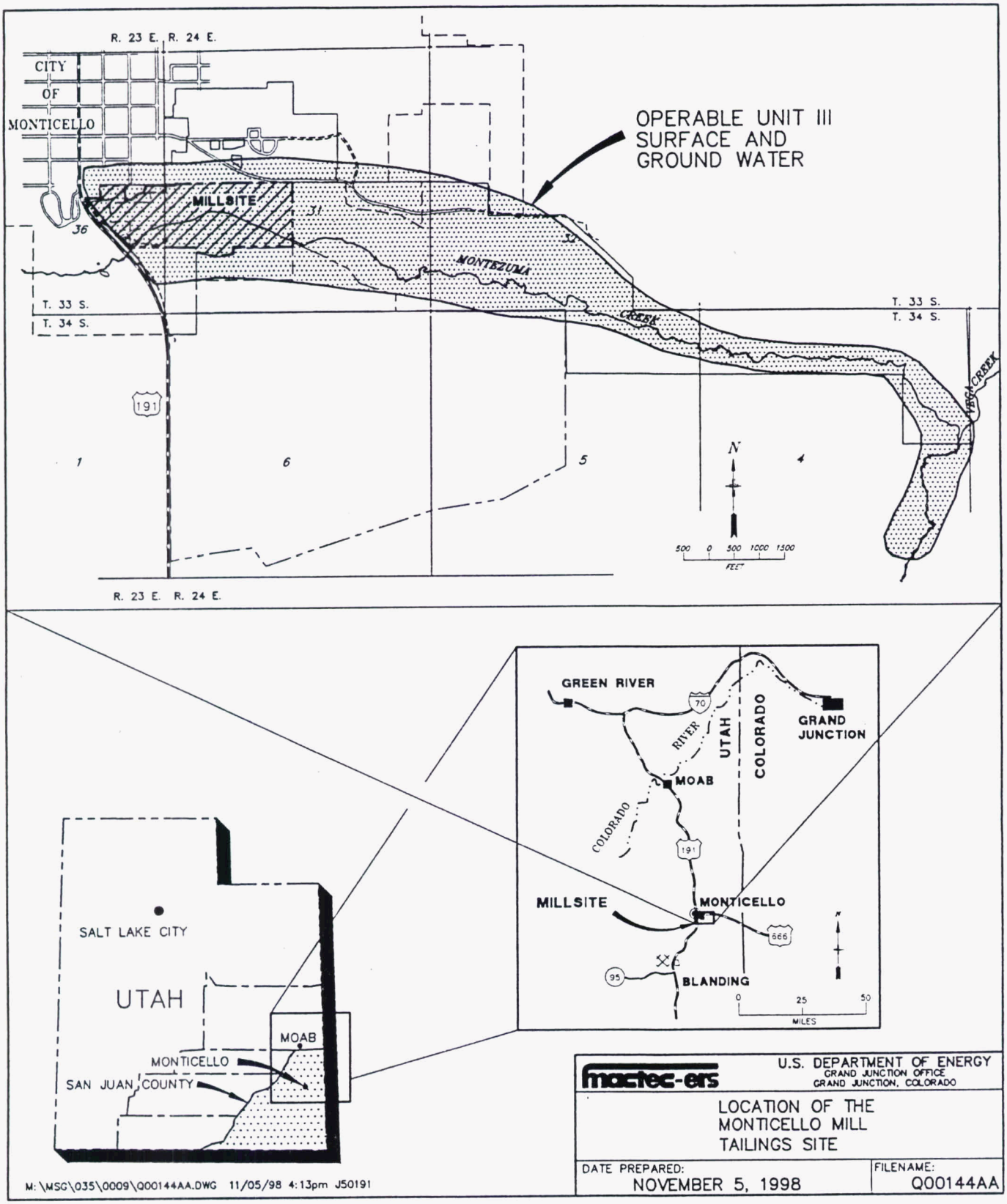

Figure 1–1. Location of the Monticello Mill Tailings Site

- **Continuation of Millsite Dewatering and Treatment**—Dewatering of the Millsite continues. Some of the water recovered is used for dust control; the rest is treated at the treatment plant before discharge to Montezuma Creek or use for dust control. Concentrations and volumes of recovered water and subsequent disposition are being tracked and recorded.

- This information will be used during the OU III IRA to calculate contaminant mass reduction in the alluvial aquifer and its effect on aquifer flushing.

- **Permeable Reactive Treatment (PeRT) Wall Treatability Study**—A deployment plan for the PeRT wall has been completed through a separate DOE project (the Accelerated Site Technology Development Program from DOE's Office of Science and Technology). This document includes a discussion of project background, management structure, tasks to be completed, and schedules for the project. The schedule is to emplace the PeRT wall in fiscal year 1999 followed by two years of performance monitoring funded by DOE's Office of Science and Technology. Field characterization has been performed in the area selected for PeRT wall installation and field treatability studies have been performed. Currently, the design specifications are being finalized. Results of the treatability study will be provided for use in development of the final remedial action decision for OU III surface water and ground water. While being conducted under a different program, activities associated with PeRT wall installation and operation are being closely coordinated with the OU III IRA and Millsite restoration; monitoring activities have been fully integrated with OU III surface-water and ground-water monitoring.

- **Feasibility Study**—The draft FS was prepared using the data and baseline risk assessments presented in the *Monticello Mill Tailings Site, Operable Unit III, Remedial Investigation* (DOE 1998d). Data used for the draft FS was collected prior to the Millsite remediation and PeRT wall installation.

1.3 Document Objective

The objective of this RD/RA Work Plan is to outline a plan to carry out the IRA activities for OU III surface water and ground water as listed in the IROD. The objectives of the IRA are to prevent exposure to contaminated ground water and to further reduce contaminant mass in surface water and ground water. The IRA activities will support development of the final record of decision for OU III and are discussed in Section 3.0 of this document.

1.4 Document Scope

The scope of this work plan is generally based on the draft EPA guidance document *Remedial Design and Remedial Action Guidance for EPA Oversight at Federal Facilities* (EPA 1993). However, several elements of a typical RD/RA work plan, as defined in the guidance, have been incorporated in other documents (see Section 1.5 below) that have been submitted to EPA and UDEQ. Therefore, to avoid potential inconsistencies between documents whenever this work plan and/or related documents are revised in the future, and to minimize duplication of data and reproduction, this work plan is designed to provide pertinent information which is not provided elsewhere. Additionally, the OU III IRA consists mostly of data collection and analysis, as

opposed to construction and remediation activities. The "standard" work plan format has been modified to better serve these purposes.

1.5 Related Documents

The following documents provide detailed information directly related to the tasks described in this work plan.

- *Monticello Site Management Plan* (DOE 1998a)
- *Monticello Mill Tailings Site, Operable Unit III, Annual Monitoring Program* (DOE 1999), draft
- *Monticello Projects Health and Safety Plan* (DOE 1997b)
- *Community Relations Plan* (DOE 1998b)
- *Monticello Projects Quality Assurance Program Plan* (DOE 1996)
- *Deployment Plan for the Permeable Reactive Treatment Wall for Radionuclides and Metals* (DOE 1997c)
- *Design Specifications for the Monticello Millsite PeRT Wall Demonstration Project* (DOE 1998f)
- *Permeable Reactive Treatment (PeRT) Wall, Characterization Report* (DOE 1998g)
- *Permeable Reactive Treatment (PeRT) Wall, Results of Field Treatability Studies for the Monticello, Utah, PeRT Wall* (DOE 1998h)
- *Permeable Reactive Treatment (PeRT) Wall Project, Monitoring Well Network Design for the Monticello Millsite PeRT Wall Groundwater Treatment System* (DOE 1998i)
- "Results of Preliminary Groundwater Flow Models for Baseline and Various Permeable Reactive Treatment (PeRT) Wall Configurations at Monticello, Utah" (Cromwell 1998)

2.0 Project Management Structure

2.1 Overview of DOE/EPA/State of Utah FFA Responsibilities

An overview of the DOE, EPA and State responsibilities for completion of the Monticello Projects is summarized in the *Monticello Site Management Plan* (DOE 1998a).

2.2 Roles and Responsibilities of the DOE Management Team

The DOE Management Team is comprised of DOE Albuquerque Operations (DOE–AL), DOE Headquarters (DOE–HQ), and the DOE Grand Junction Office (DOE–GJO). The relationship between the offices is described in the Site Management Plan.

The following Project Managers have been assigned by DOE with responsibility for OU III:

- Lead Project Manager who is responsible for overall project integration, daily project coordination, and is assigned the responsibilities of the Project Coordinator. The Project Coordinator is the formal GJO point of contact for EPA, the State, and DOE–HQ for the Monticello Projects.

- OU III Project Manager who manages the remediation of soil and sediment on OU III peripheral properties, the surface-water and ground-water IRA, and preparation of surface-water and ground-water decision documents.

The GJO has also assigned matrix support for procurement, public affairs, health and safety and environmental compliance to the Monticello Projects. The Office of Chief Counsel at DOE–AL is the legal advisor to the projects. Financial, procurement, and real estate management assistance and support is also provided by DOE–AL.

2.3 Technical Assistance and Remedial Action Contractor Management Structure

The DOE–GJO has contracted with MACTEC Environmental Restoration Services, LLC as the remedial action contractor (RAC). The RAC is responsible for ensuring that all remedial activities are executed in compliance with FFA, regulatory, and health and safety requirements. The RAC Program Manager reports directly to the DOE–GJO Project Managers and has the ultimate responsibility for implementing the project scope and schedule defined by the DOE Project Managers.

The RAC has assigned a Project Manager to OU III who reports to the Program Manager and is responsible for the day-to-day implementation and management of the project as directed by the DOE–GJO Monticello Project Coordinator. Neither the Program Manager, nor any other RAC personnel, have authority to speak for DOE on project direction, schedule, issues, or policy.

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3.0 Operable Unit III Work Elements

The work elements remaining for completion of the OU III IRA are discussed in this section. The soil and sediment components of OU III are being documented in completion reports (currently in preparation) and in the following reports:

- *Monticello Mill Tailings Site, Operable Unit III, Alternatives Analysis of Soil and Sediment*, GJO–97–10–TAR, prepared by MACTEC Environmental Restoration Services for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, September 1998.

- *Monticello Mill Tailings Site, Operable Unit III, Action Memorandum*, prepared by MACTEC Environmental Restoration Services for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, June 1998.

- *Monticello Mill Tailings Site, Operable Unit III, Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek*, GJO–98–58–TAR, Vol I, prepared by MACTEC Environmental Restoration Services for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, January 1999.

- *Monticello Mill Tailings Site, Operable Unit III, Upper Montezuma Creek DOE ID Nos. MG–00951–VL, MG–00990–CS, MG–01026–VL, MG–01033–VL, and MG–01084–VL Removal Action Design*, GJO–98–42–TAR, GJO–MRAP–48, prepared by MACTEC Environmental Restoration Services for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, May 1998.

- *Monticello Mill Tailings Site, Operable Unit III, Lower Montezuma Creek DOE ID Nos. MG–01028–VL, MG–01029–VL, MG–01030–VL, Removal Action Design*, GJO–97–37–TAR, GJO–MRAP–46, prepared by MACTEC Environmental Restoration Services for the U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, May 1998.

The scope of the data acquisition and monitoring elements is somewhat dependent on the continuing changes to surface- and ground-water conditions brought on by Millsite excavation; the scope may also be refined as information is obtained and interpreted during the IRA. For these reasons many of the details for some work elements are not covered in this document but will be included in stream-lined sampling and analysis plans. The overall goals of these efforts are to obtain the information necessary to revise the hydrological conceptual site model and provide the basis for an evaluation of remedial alternatives in the FS. To accomplish these goals in an efficient manner, DOE intends to have quarterly meetings with EPA and the State during which results of recent data gathering efforts and the technical aspects of planned activities are discussed.

3.1 Institutional Controls

3.1.1 Privately-Owned Property

The Utah State Engineer's Office has informally approved the request for institutional controls for the shallow alluvial aquifer. The State has assumed responsibility to implement these controls by refusing to issue well installation permits for the controlled areas and blocking water use. The property locations affected by contaminated ground water and where institutional controls will be applied are shown in Figure 3.1.1–1. The State will be responsible for preparing a water management plan for the contaminated alluvial aquifer to address these issues.

The State Engineer has assumed the lead for fulfilling public participation requirements associated with the implementation of institutional controls. DOE will assist the State Engineer in holding a public comment period and a public meeting and will also assist in coordinating these activities with the development of the water management plan. DOE will visit with the landowners to discuss the restrictions once these restrictions are finalized and will conduct annual inspections of the property to look for any evidence of well installations or ground-water use to ensure that the institutional controls are working. The results of these inspections will be reported in the annual IRA status reports.

The institutional controls will remain in place at least until the final record of decision for OU III is developed. The need to continue institutional controls will be reevaluated at that time. It is anticipated that institutional controls will remain in place after the final record of decision for OU III is signed. The results of the annual inspections and a determination as to whether the institutional controls are protective of human health will be evaluated and documented in the CERCLA 5-Year Review reports.

3.1.2 Government-Owned Property

Several small areas of government-owned property overlie the contaminated alluvial aquifer (Figure 3.1.1–1). Four of these properties (MS–00893, MP–00181, MP–00391–VL, and MP–01072–VL) are anticipated to be transferred to the city of Monticello once surface remediation activities are complete. Use of alluvial aquifer ground water will be limited by means of deed restrictions placed on those properties. One other piece of DOE-owned land is anticipated to be sold to a private entity (MS–01081–VL). Deed restrictions will also limit the use of alluvial ground water for this property. The timing of land transfers is contingent on implementing an appropriate lands to parks transfer process. DOE is currently pursuing a transfer under the Federal Lands to Parks Program. Once the details of the program are clarified, DOE will develop a schedule for implementation.

3.2 Continued Dewatering and Treatment of Millsite Ground Water and Surface Water, as Necessary

Dewatering and treatment activities are ongoing as part of OU I. DOE anticipates operating the treatment plant through April 1999. The duration of plant operation and its potential impact on relocation of the plant is dependent on the volume of water in Pond 4, the expected water

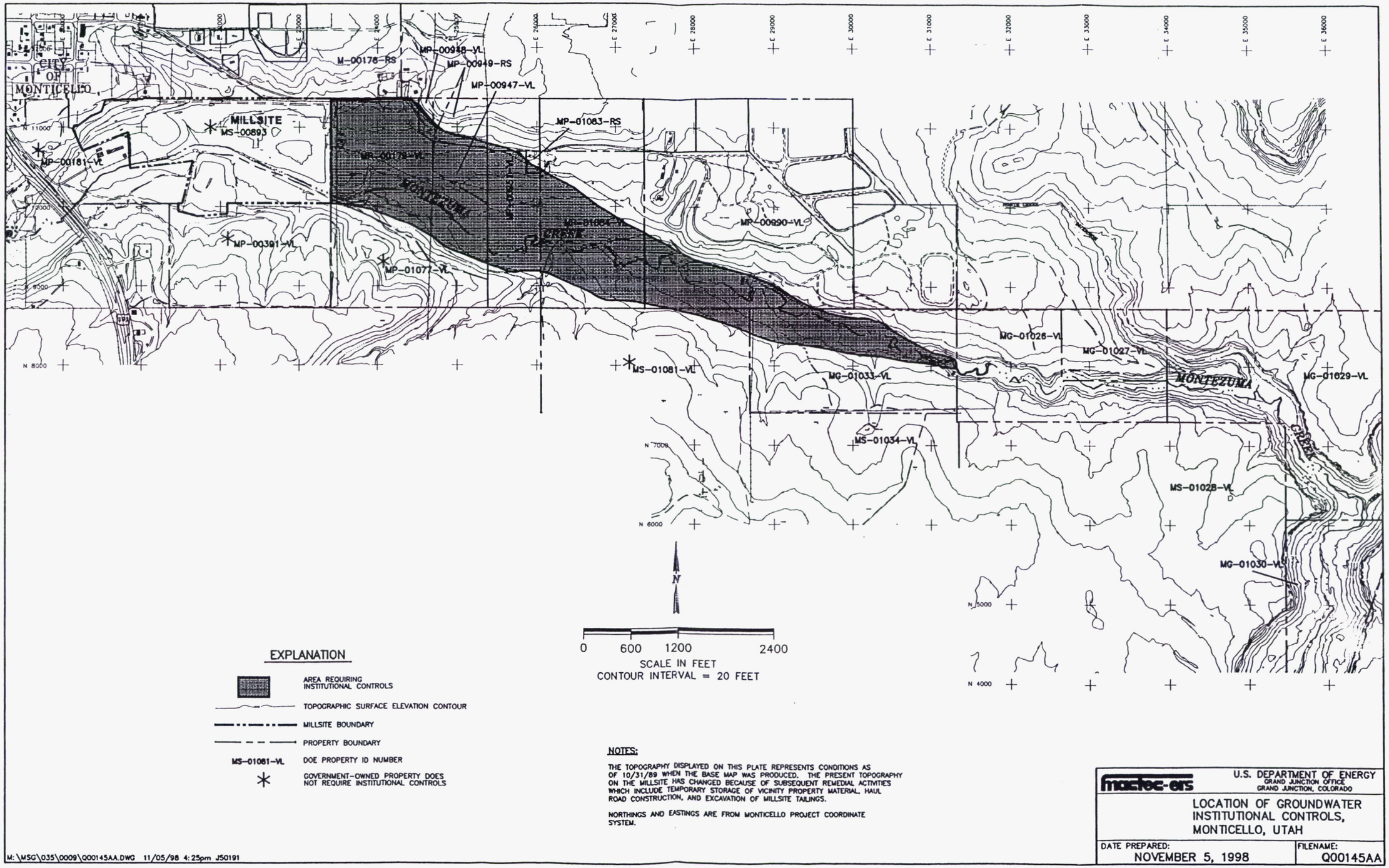

Figure 3.1.1–1. Location of Ground Water Institutional Controls, Monticello, Utah

produced while completing Millsite excavation, and requirements for storage of transient drainage from the repository.

Currently, OU III involvement in dewatering and treatment activities is limited to acquisition of data on volumes and concentrations of water being removed from the subsurface for the purposes of estimating reduction of contaminants from the alluvial aquifer. At the time that OU I excavation is completed and dewatering and treatment is no longer required for those activities, the need for continued water pumping and treatment to support remediation of OU III will be evaluated. If continued water treatment is required because of unacceptably high contaminant concentrations in surface water or ground water or because of PeRT wall failure or long-term effects on ground-water quality east of the Millsite, then criteria for the continuation of this work element will be determined at that time.

3.3 Monitoring and Additional Data Collection

Data collection will be pursued for the following purposes:

- Characterization of the vadose zone
- Characterization of the post-remediation water table, ground-water contaminant plume, and surface-water contaminant concentrations.

Data collected from this additional sampling will be used in refining the ground-water flow and transport model for the site and in revising the draft FS (1998c) to support selection of the final remedial alternative.

3.3.1 Ground- and Surface-Water Monitoring

Ground-water and surface-water monitoring has been an ongoing activity in accordance with the *Monticello Mill Tailings Site, Operable Unit III, Annual Monitoring Program* (DOE 1997a). The program is currently being updated as presented in the draft Monticello Mill Tailings Site, Operable Unit III, Interim Remedial Action, Annual Monitoring Program (March 1999). The revised program will consist of (1) quarterly collection and analysis of surface-water and ground-water samples, (2) monitoring requirements associated with the PeRT wall treatability study, (3) quarterly measurement of ground-water levels and stream flows, (4) verification and validation of analytical and measurement results, (5) development of ground-water elevation maps, contaminant distribution plots, time/concentration plots, and well hydrographs, and (6) reporting of sampling results from each fiscal year in a data summary report that will be prepared in the following fiscal year. It is anticipated that the monitoring program may require annual updates to incorporate sample collection from new surface-water locations or newly installed monitoring wells. Installation of new monitoring wells is discussed further in Sections 3.3.3 and 3.4.

Surface-water and ground-water samples will be collected during the October (fall), January (winter), April (spring), and July (summer) time frames. Locations sampled during October 1998 are presented in Figures 3.3.1–1 and 3.3.1–2. Sampling months may vary slightly in an attempt to match spring high-flow and fall low-flow conditions or because of winter weather conditions.

Ground-water level and stream-flow measurements are obtained on a quarterly basis in conjunction with the sampling events.

3.3.2 Vadose-Zone Characterization

Verification sampling for OU I is ongoing as cleanup is being completed. These OU I verification sampling data will be used for characterization of metals in the sub-pile vadose zone; supplemental sampling to serve this purpose will occur as areas are verified on the Millsite. Data collection activities will be designed to provide information on contaminant transport parameters and controls, such as soil:water distribution coefficients. Information obtained during vadose-zone characterization will be used to update the ground-water flow and transport model. DOE has prepared a draft streamlined sampling and analysis plan (DOE 1998j) for this effort which has been submitted to EPA and the State for comment and approval.

The following activities are proposed:

- Collection of vadose zone soil samples
- Column tests to determine vadose zone distribution coefficients and leaching characteristics
- Installation of suction lysimeters to determine pore water contaminant concentrations
- Characterization of backfill materials used at the Millsite

3.3.3 Surface- and Ground-Water Characterization

Post-remediation characterization of surface-water and ground-water contaminant concentrations and of the water table will be initiated once significant areas of Millsite excavation are complete. The additional water sampling is anticipated to reflect any impacts OU I remediation may have on the alluvial aquifer or surface water. A streamlined sampling and analysis plan will be prepared for this characterization and submitted to EPA and UDEQ for approval before the work is initiated. The following activities are anticipated:

- Collect soil samples and install temporary well points
- Column tests to determine leachability of selected contaminants
- Installation of alluvial wells on and downgradient from the Millsite for long-term monitoring
- Batch testing to determine saturated zone distribution coefficients
- Selection of new locations for long-term surface-water monitoring

Water-level and contaminant-concentration information obtained from the temporary well points will be used in conjunction with historical concentrations to select locations for long-term monitoring wells. The number of wells installed will be sufficient to define ground-water flow directions and to depict contaminant plumes. The schedule for water sampling and associated

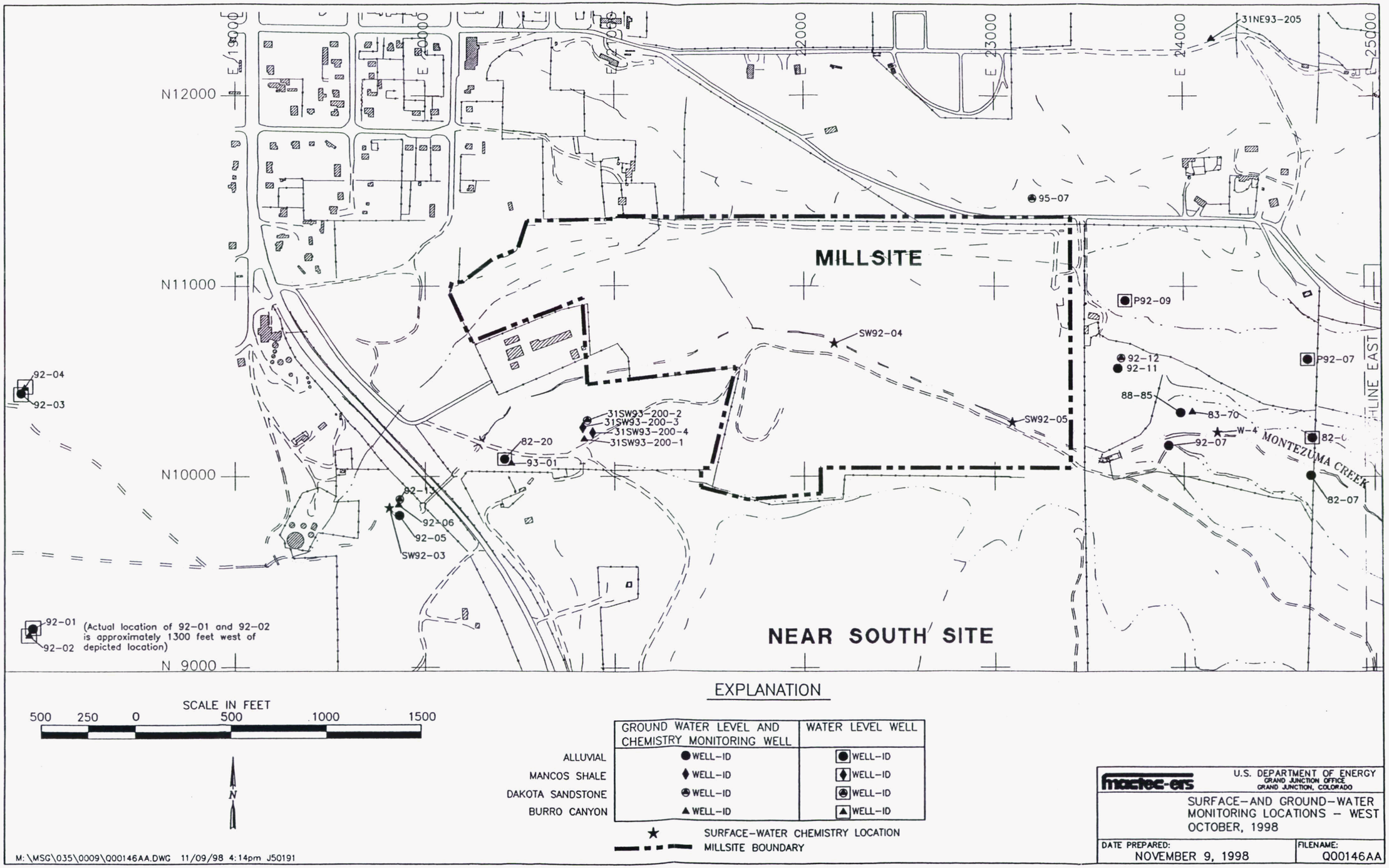

Figure 3.3.1–1. Surface- and Ground-Water Monitoring Locations—West, October 1998

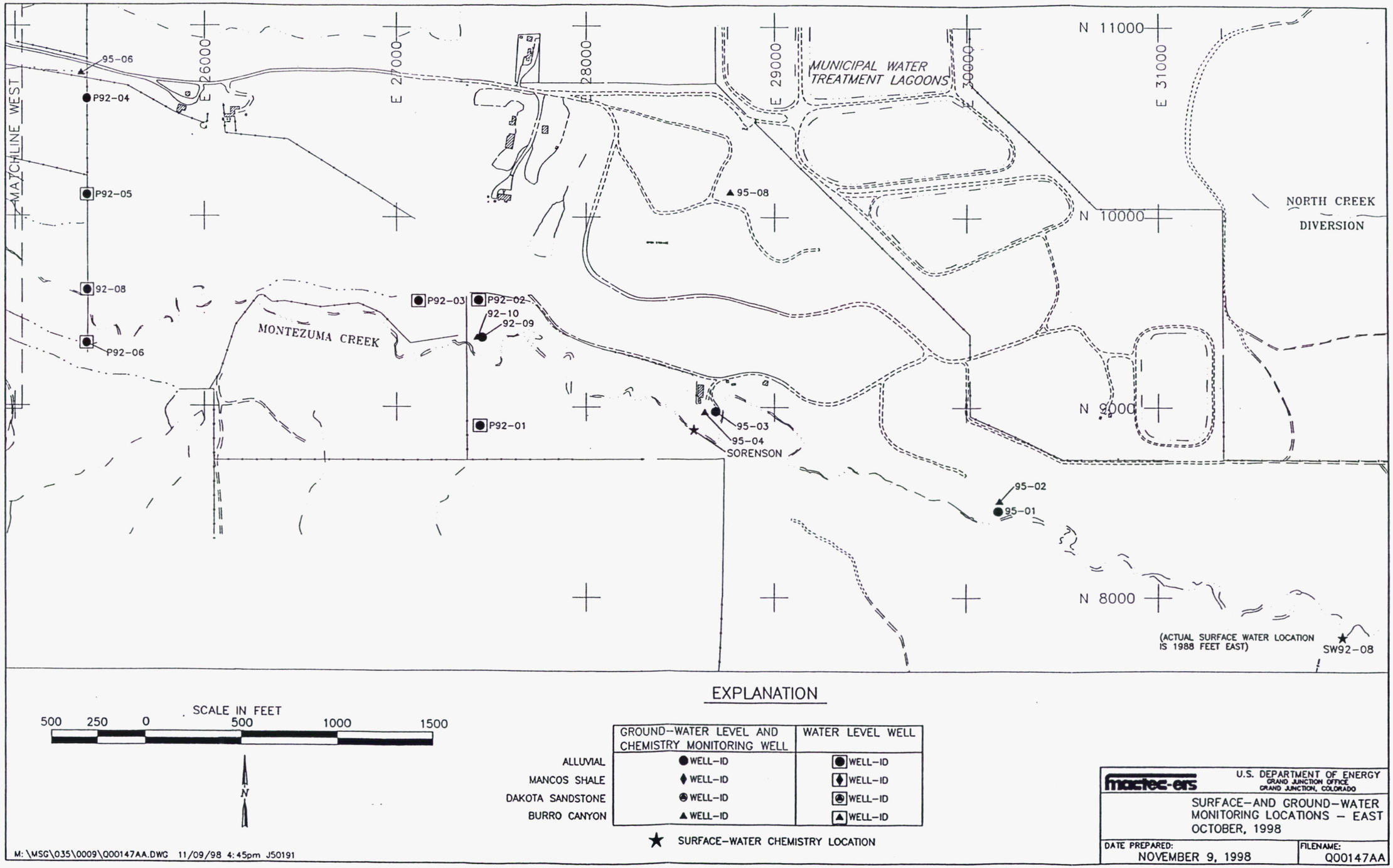

Figure 3.3.1–2. Surface- and Ground-Water Monitoring Locations—East, October 1998

activities is contingent on the progress of Millsite remediation; excavation activities are expected to be completed in summer 1999.

3.4 PeRT Wall Treatability Study

A treatability study for the evaluation of a PeRT wall for the in-situ treatment of ground water is being conducted at the MMTS. The treatability study is being conducted on a large enough scale that it is anticipated to have an impact on the ground-water quality of the alluvial aquifer. Data collected on the performance of the PeRT wall will be evaluated along with other OU III data in the revised FS and will be used in selecting the final remedy for OU III. Construction of the PeRT wall is scheduled for completion in spring or summer 1999 and has been coordinated with the 60 percent Millsite reclamation design.

Three monitoring wells exist upgradient and one well exists downgradient of the proposed location for the PeRT wall (Figure 3.4–1). These wells are included in the Annual Monitoring Program. Monitoring wells will be installed during PeRT wall installation. These wells will be located within the reactive barrier and within a few feet upgradient and downgradient of the reactive barrier. Monitoring of PeRT wall performance will continue on a quarterly basis for up to 2 years after construction. The frequency of long-term monitoring will be determined by the results obtained over the first two years of PeRT wall operation. Monitoring requirements are being incorporated into the draft Monticello Mill Tailings Site, Operable Unit III, Interim Remedial Action Annual Monitoring Program (DOE 1999).

It is anticipated that decisions regarding further scale-up of the PeRT wall, continued operation, or shutdown and decommissioning will be made concurrent with the final OU III remedial action decision. For additional information regarding the PeRT wall treatability study, refer to the *Deployment Plan for the Permeable Reactive Treatment Wall for Radionuclides and Metals* (DOE 1997c), *Design Specifications for the Monticello Millsite PeRT Wall Demonstration Project* (DOE 1998f), *Permeable Reactive Treatment (PeRT) Wall, Characterization Report* (DOE 1998g), *Permeable Reactive Treatment (PeRT) Wall, Results of Field Treatability Studies for the Monticello, Utah, PeRT Wall* (DOE 1998h), *Permeable Reactive Treatment (PeRT) Wall Project, Monitoring Well Network Design for the Monticello Millsite PeRT Wall Groundwater Treatment System* (DOE 1998i), and "Results of Preliminary Groundwater Flow Models for Baseline and Various Permeable Reactive Treatment (PeRT) Wall Configurations at Monticello, Utah" (Cromwell 1998).

3.5 Feasibility Study

The draft FS will be revised to incorporate changes in the surface- and ground-water systems as a result of Millsite remediation and PeRT wall installation. Revisions will include updating the ground-water modeling effort to incorporate the data collected during the IRA such as revised estimates of source in the vadose zone and ground water, new ground-water levels and flow conditions, and impacts of the PeRT wall. The results of the updated modeling effort will be compared to the input that was used in the RI to determine the future risk to human health and to forecast contaminant concentrations in time and space. The effect of the new input on the results of the human health risk assessment will be evaluated.

Changes to the scope of the draft FS will be based on technical discussion amongst DOE, EPA, and the State during the course of the IRA and will be summarized in a FS work plan. The range of remedial alternatives agreed upon with EPA and UDEQ during the technical meetings will be presented in the FS Work Plan as well as the methods that will be used to evaluate them. Data collection activities discussed in Section 3.3 will be tailored so that all necessary information is collected and analyzed prior to preparation of the post-Millsite remediation FS. Therefore, other than the updated ground-water modeling effort which will be initiated approximately two years before submittal of the post-Millsite remediation FS, the schedules for activities associated with preparation of the post-Millsite remediation FS are incorporated into the monitoring and additional data collection and PeRT wall treatability study work elements.

3.6 Cost Summary

The current cost estimate for each fiscal year for completion of OU III of the MMTS is as follows:

FY 99	FY00	FY01	FY02	FY03	FY04	FY05	FY06
$1,921K	$852K	$853K	$1,005K	$834K	$772K	$944K	$304K

The annual funding shown for fiscal year 2006 will continue until compliance with applicable or relevant and appropriate requirements is established.

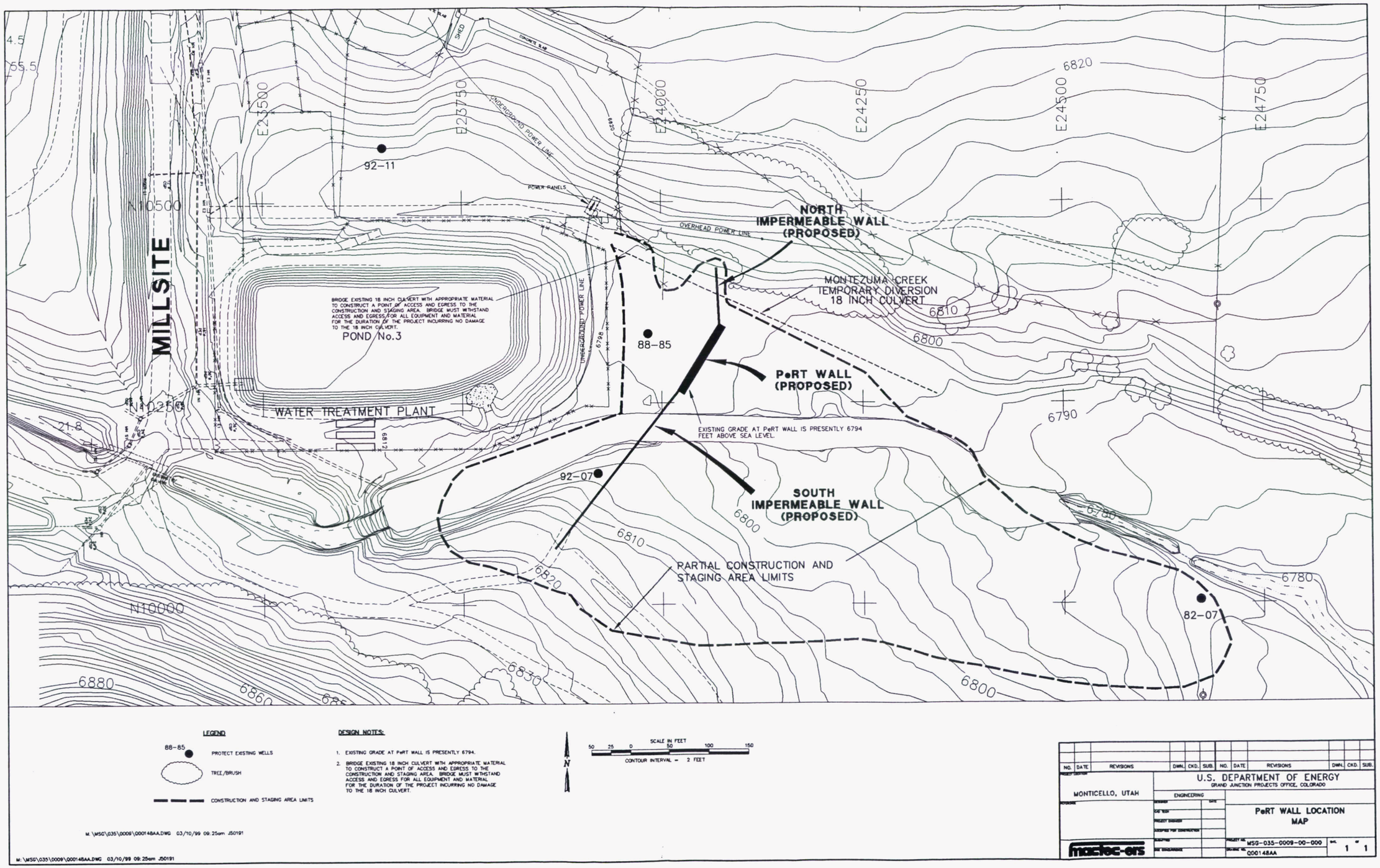

Figure 3.4.–1. PeRT Wall Location Map

4.0 Interim Remedial Action Documentation

The tasks associated with the IRA for OU III consist largely of data collection and analysis rather than design and construction of a remedial alternative. To report progress on the IRA, an annual status report will be prepared near the close of each fiscal year. Additionally, the following documents and activities will be required for planning and reporting on the IRA:

- Institutional Controls

  DOE has received verbal approval from the Utah State Engineer's Office of the request to implement institutional controls on the alluvial ground water. The State Engineer has accepted responsibility for developing a water management plan that implements these controls. DOE will assist in the preparation of this plan, as necessary. To fulfill public participation requirements, the State Engineer, with DOE in assistance, will hold a public comment period and conduct a public meeting before institutional controls are finalized. A public notice will be prepared and distributed to the public prior to the public meeting. DOE will conduct annual site inspections to ensure that the institutional controls are working; the results of these inspections will be presented in annual IRA status reports and in the CERCLA 5-Year Review reports.

- Dewatering/Treatment

  Data regarding contaminant mass reduction in the alluvial aquifer through dewatering and treatment activities will be collected for as long as the water treatment plant is operational. This information will be used in the post-Millsite remediation FS to assist in the evaluation of final remedial alternatives for OU III. The post-Millsite remediation FS is projected to be completed in spring 2004.

- Monitoring and Additional Data Collection

  Streamlined sampling and analysis plans will be developed to describe the additional data collection activities. A sampling and analysis plan was developed during fall 1998 for the vadose zone soil sampling. Soil sample collection has begun and will continue during FY 1999. A sampling and analysis plan for the post-remediation water table and plume characterization and surface-water monitoring will be prepared prior to completion of Millsite excavation, which is expected to be summer 1999. This additional data will be used to refine the ground-water model for the alluvial aquifer and to revise the FS to reflect the most current understanding of OU III conditions. Monitoring and other data collection results will be reported to EPA and the State informally prior to the quarterly technical meetings. Surface- and ground-water sampling results will be reported in an annual data summary report; other results (such as those from vadose zone samples or column studies) will be reported in the annual IRA status report.

- PeRT Wall

  Wells installed for the purposes of monitoring PeRT wall performance will be sampled on a quarterly basis as part of the surface-water and ground-water monitoring program. Quarterly reports in the form of informal memoranda will be submitted to OU III management along with the annual IRA status reports. The PeRT wall monitoring activities will be revised, as necessary, in updates to the annual monitoring program.

- Feasibility Study

  A post-remediation FS work plan will be prepared to outline the scope of ground-water flow and transport modeling, the range of remedial alternatives to be evaluated in the FS, and the methods and assumptions that will be used for evaluation.

  The ground-water modeling effort performed during the Monticello Mill Tailings Site, Operable Unit III, Remedial Investigation (DOE 1998d) and pre-Millsite remediation FS will be updated to reflect post-Millsite remediation conditions on and downgradient of the Millsite including revised estimates of source in the residual vadose zone and ground water, new ground-water levels, and impacts of the PeRT wall. This revised FS will also document a reevaluation of the results of the human health risk assessment presented in Volume VI of the Monticello Mill Tailings Site, Operable Unit III, Remedial Investigation (DOE 1998d) in light of the data collected and ground-water modeling conducted during the IRA. The post-Millsite remediation FS will incorporate the updated ground-water modeling effort and the PeRT wall treatability study results.

5.0 Schedule of Activities

Listed below are the major activities and documents that will be prepared leading up to the record of decision for OU III. Primary documents are this RD/RA Work Plan, the FS Work Plan, the FS, the Proposed Plan and the Record of Decision. All other documents can be considered secondary documents. Figure 5–1 shows the timing of OU III activities as compared to Millsite activities.

- Annual Interim Remedial Action Status Report — August (yearly)
- CERCLA 5-Year Review reports — 2/13/2002 (every five years)

Institutional Controls

- Letter of request and justification for institutional controls — submitted 7/9/98
- Approved from Utah State Engineer to proceed with institutional controls — 10/21/98
- Public comment period — 4/99
- Institutional Controls implemented — 6/99
- Annual Site Inspections (Reported in annual IRA status reports and CERCLA 5-Year Review reports) — Annually (beginning 4/00)

Monitoring and Additional Data Collection

- Revise Annual Monitoring Program — 12/98
- Regular monitoring according to Annual Monitoring Program — quarterly (beginning 10/98)
- Surface-Water and Ground-Water Monitoring Data Summary — November (yearly)
- Sub-pile Vadose Zone Sampling and Analysis Plan — 11/16/98
- Sub-pile vadose zone field work [Reported in annual IRA status reports] — FY 1998 and 1999
- Post-Remediation Plume/Water Table Sampling and Analysis Plan — 5/99
- Initiate Post-remediation plume/water table field work [Reported in annual IRA status reports] — 2/99

PeRT Wall	
• Complete installation of the PeRT Wall	6/99
• Monitoring of PeRT Wall	quarterly (beginning 7/99)
• Revise Interim Remedial Action Annual Monitoring Program	1/2000
Post-Remediation Feasibility Study Work Plan	8/30/2002
Draft Final FS	5/14/2004
Draft Final Proposed Plan	12/15/2004
Draft Final Record of Decision	5/15/2005

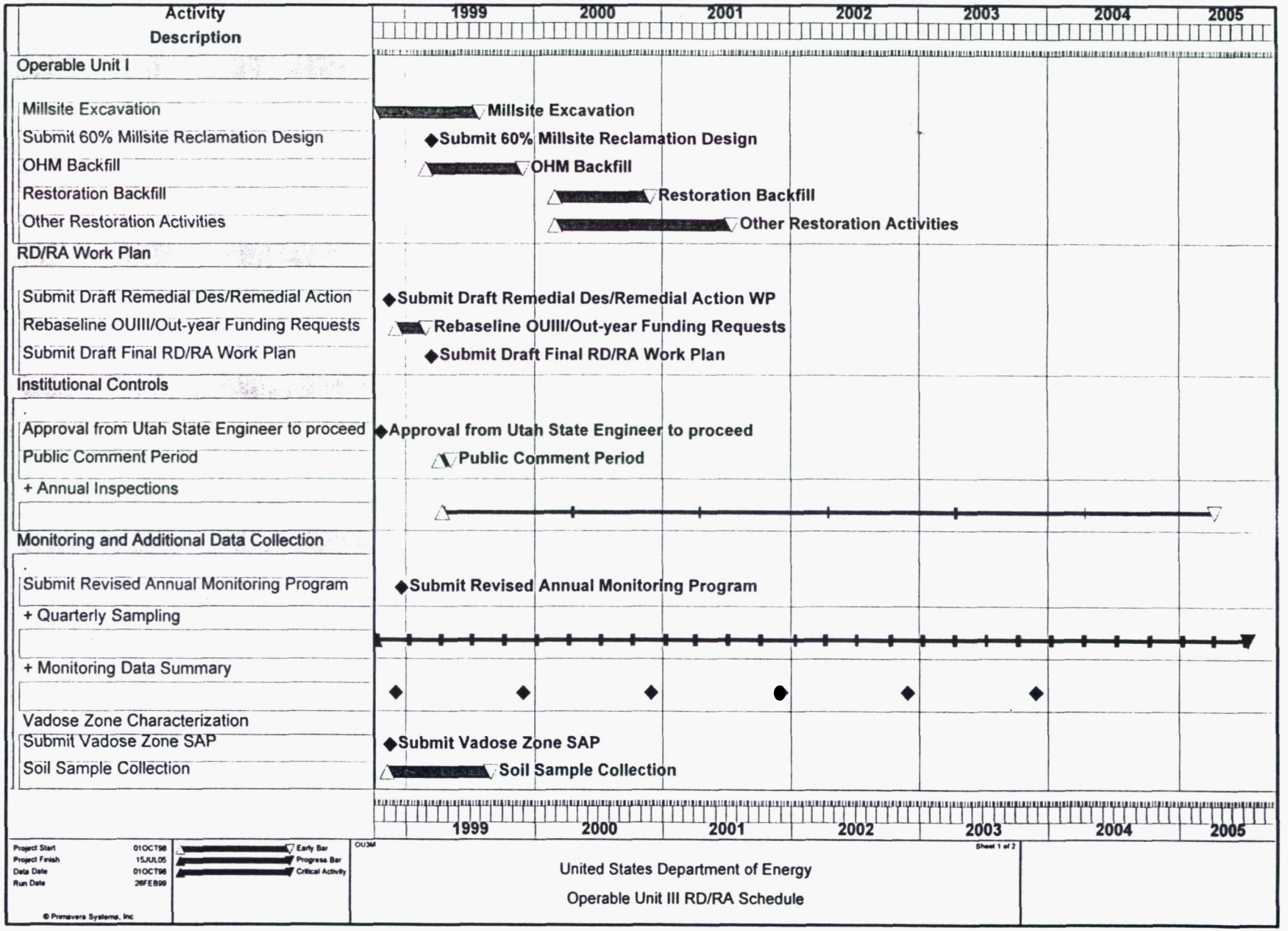

Figure 5–1. Operable Unit III Schedule

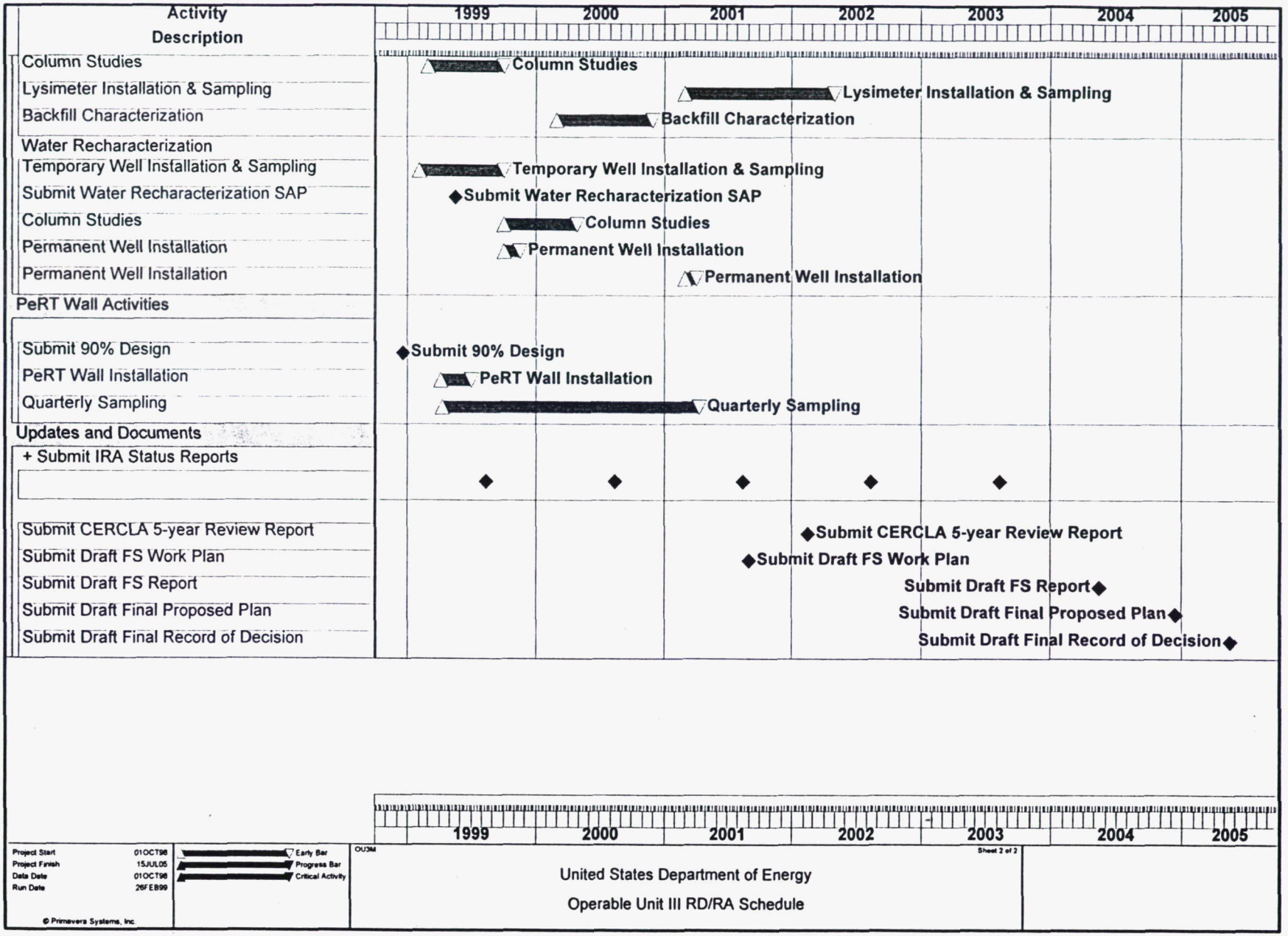

Figure 5–1. Operable Unit III Schedule (continued)

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